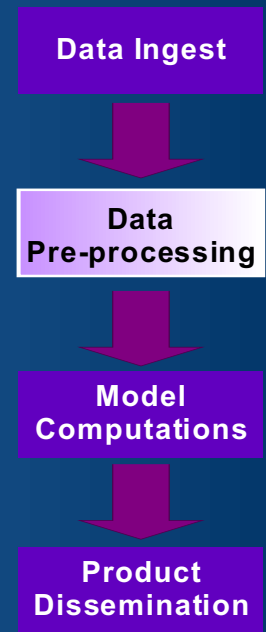# Preprocessor Parameters

PPINIT
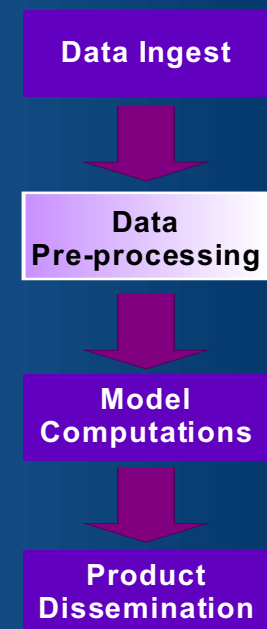
PPINIT

Initialize the Data Preprocessing Functions

PPINIT sets up the parametric
information needed to process
observations and forecasts into a form
that is suitable for ingest into our models.

Data Ingest

Data
Pre-processing

Model
Computations

Product
Dissemination

PPINIT

Provides a Link Between Raw (Preprocessed) and Processed Data

- Preprocessed data is the raw observations, with missing data and irregular time steps.

- Processed data has regular time steps.

- Processed data is called "time series" data.

- Preprocessed data resides in the Preprocessor Data Base (PPDB).

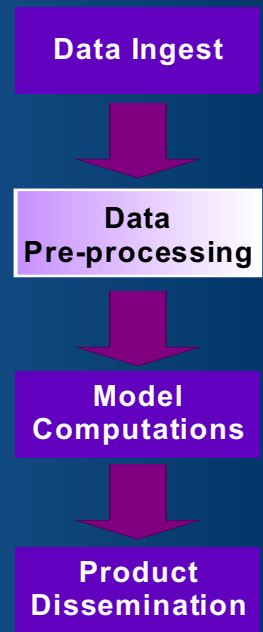- Time Series (or processed data) reside in the Processed Data Base (PRD, or PDB).

Data Ingest

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Data Pre-processing

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Model Computations

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Product Dissemination

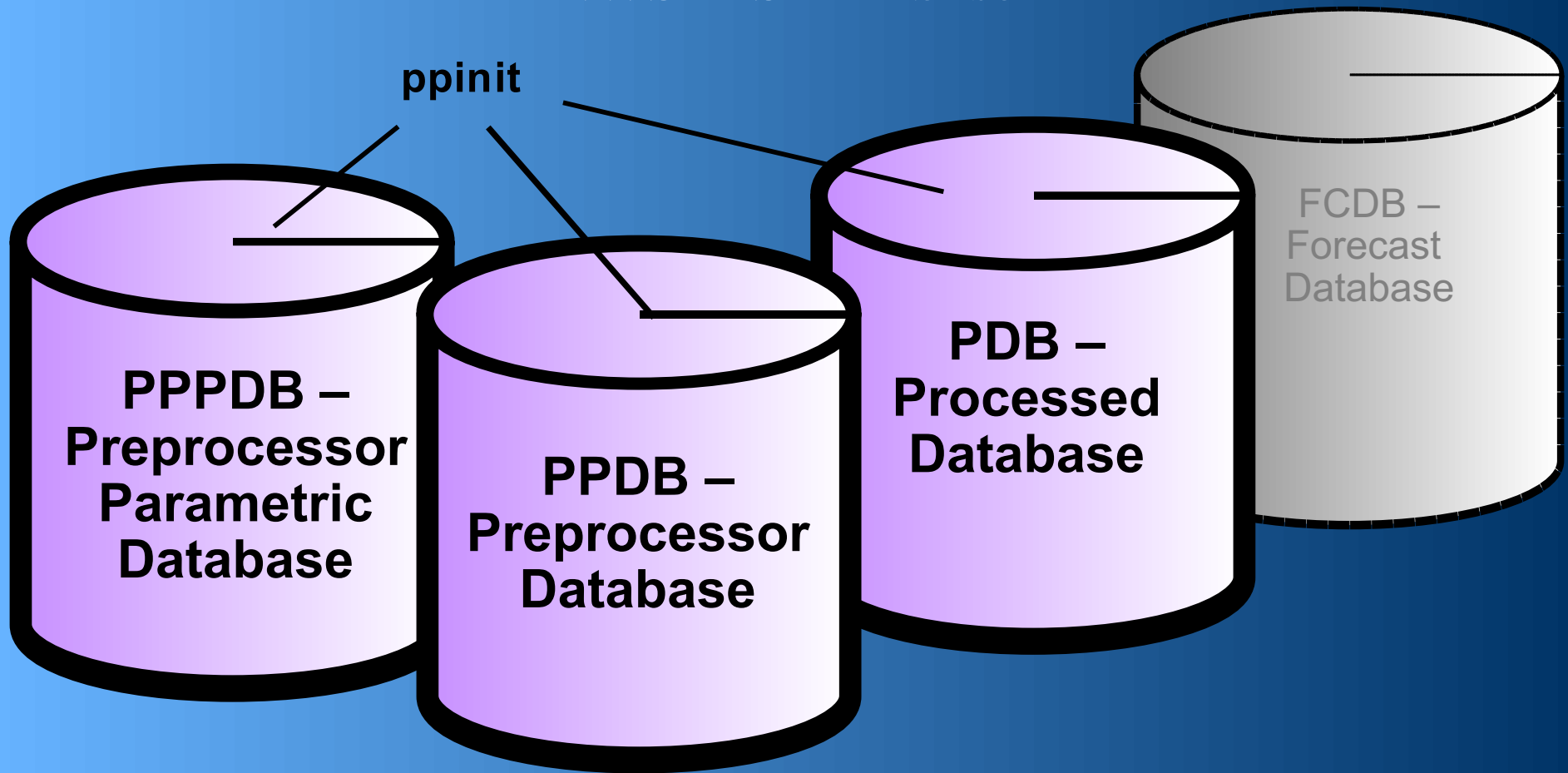**Within NWSRFS,ONLY Processed data is called a time series.**

PPINIT

What does PPINIT do to the databases?

- Interacts with the PDB, PPDB and PPPDB
- Writes parametric information to the PPPDB
  - Parameter types: NETWORK, STATION, AREA, BASIN, USER
- Allocates space in the PPDB for the raw observations and forecasts.
- Allocates space in the PRD for the processed time series data associated with the AREAs and RRS STATIONs.

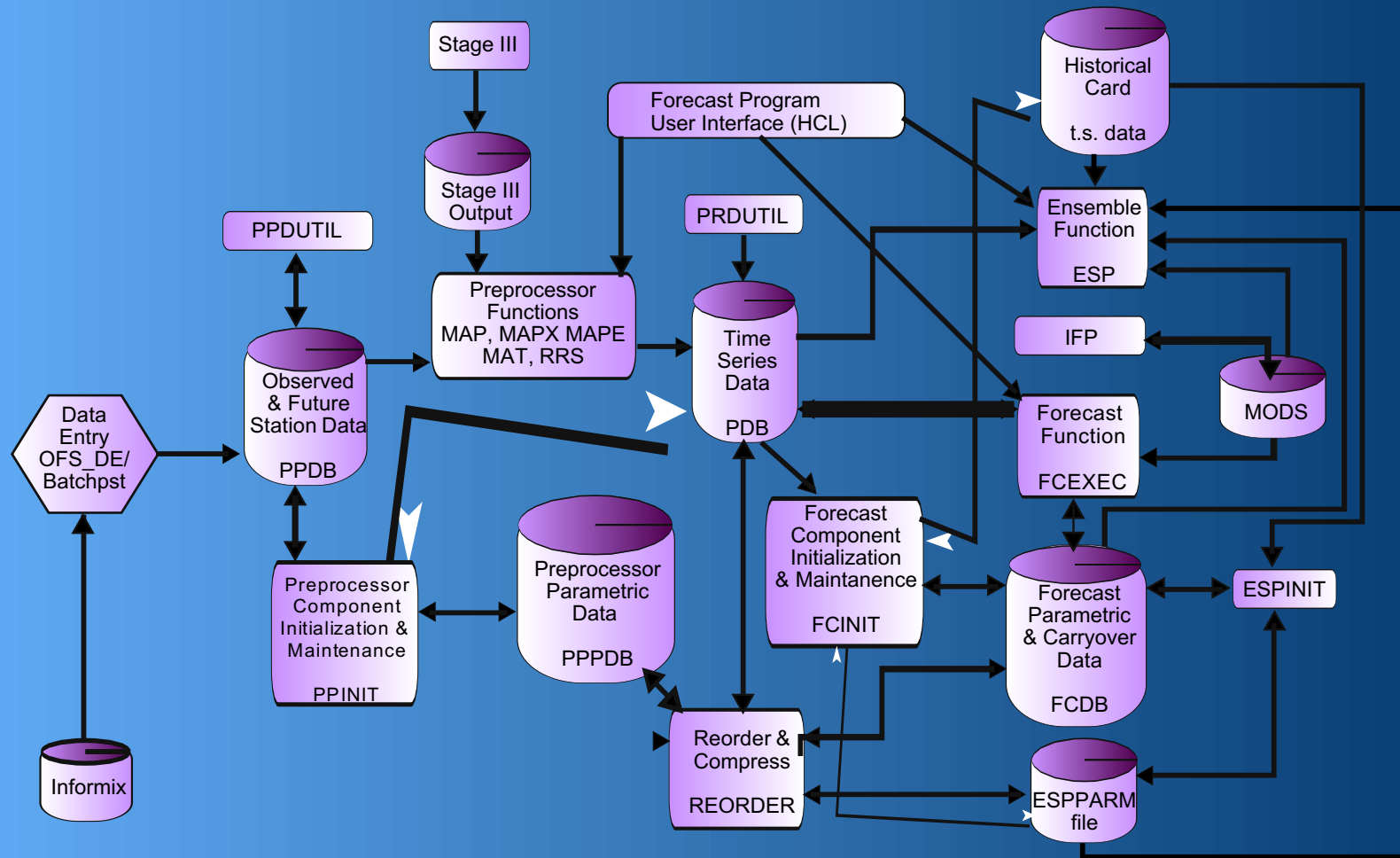Data Ingest

Data Pre-processing

Model Computations

Product Dissemination

PPINIT

NWSRFS Database

ppinit

PPPDB –
Preprocessor
Parametric
Database

PPDB –
Preprocessor
Database

PDB –
Processed
Database

FCDB –
Forecast
Database

Operational Forecast System

The Database

PPINIT

Definition of Terms: BASIN, AREA, STATION, USER

- BASIN: A basin boundary, a series of Lat/Lon points interpolated to HRAP grids.

- AREA: An abstract notion for averaging point data to areal averages. May or may not be connected to a BASIN.

- STATION: An identified location (lat/lon and id) where data is collected.

- USER: User default parameters.

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PPINIT

Specific PPINIT Functions

- DEFINE STATION, BASIN, AREA or USER: writes parameters to the OFS DataBases.

- PUNCH and PRINT: extract Station, Area or Basin Definitions from the fs5files DataBase and format it into text.

- STATUS: provides information about the ofs DataBases.
  (e.g. How full are your files?!)

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PPINIT

Types of Stations

- **PCPN – precipitation stations:**
  - ▸ Missing data estimation by 1/d^2 or predetermined weights (a.k.a. significance weights),
  - ▸ Monthly means may be input for use in missing data estimation.

- **TEMP – temperature stations:**
  - ▸ Max/Min and instantaneous stations,
  - ▸ Synthetic stations,
  - ▸ Monthly means required for missing data estimation.

Data Ingest

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Data Pre-processing

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**Model Computations**

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Product Dissemination
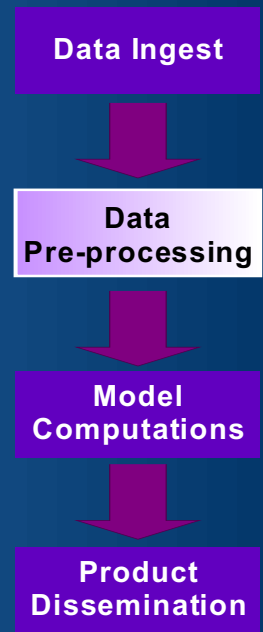
PPINIT

Types of Stations

- RRS – river, reservoir, snow stations:
  - ▸ Define the data type that will be collected.
  - ▸ Define interpolation scheme:
    - – User defined,
    - – Dependent upon data type.
  - ▸ Define the number of days of data and number of observations to be held in the PPDB.
  - ▸ Define the desired time interval of the time series on the PDB.
  - ▸ NOMSNG flag for PRD time series.

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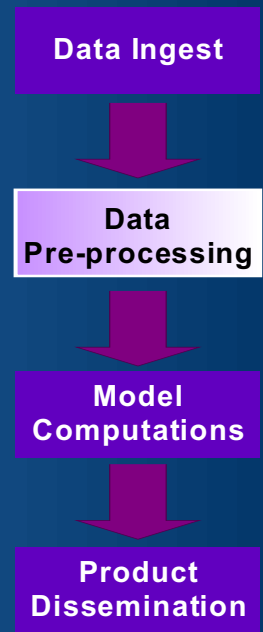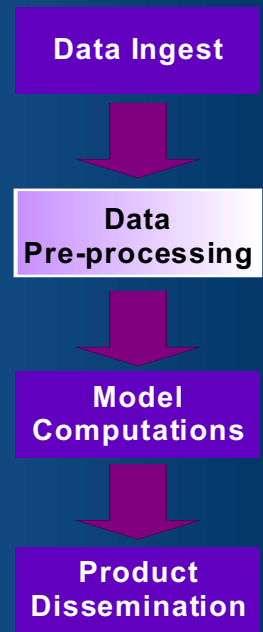
PPINIT

Types of Areas

- MAP – Areal average precipitation computed with Theissen weights, or predetermined weights. May or may not be connected to a BASIN definition. Creates 6 hour time series in the Processed DataBase.

- MAPX – Areal average precipitation computed from hourly gridded precipitation fields. Must be connected to a BASIN defintion. Creates 1 hour time series in the Processed Database.

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Product Dissemination

PPINIT

Types of Areas

- FMAP – Future MAP. Data entered via FMAP mod. MUST be linked to a MAP or MAPX definition. Creates 6 hour time series in the Processed Data Base.

- MAT – Areal average temperature computed with $1/d^x$ or predetermined weights. Both observed and future data. Creates 6 hour time series in the Processed DataBase.

- MAPE – Areal average Potential Evaporation. Creates 24 hour time series in Processed DataBase.

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PPINIT

USER Parameters

- User Lat/Lon box
- Min/Max elevation
- Start/End of summer and winter
- Default weighting scheme
- Default RRS parameters

Data Ingest

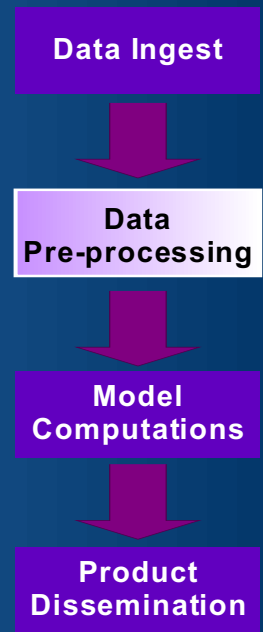Data Pre-processing

Model Computations

Product Dissemination

PPINIT

NETWORK Parameters

- NETWORK parameters define the relations between:
  - ▸ stations for estimating missing data.
  - ▸ stations and areas for areal averaging (when not using predetermined weights).

- NETWORK parameters are computed by PPINIT when you run the @NETWORK command (@NETWORK must be run after new station definitions in order to network them into your preprocessor computations).

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PPINIT

Command Names and Syntax

- Always put an @ before PPINIT commands
- For writing parameters into the PPPDB
  - ▸ @DEFINE
- For computing NETWORK parameters and writing to the PPPDB
  - ▸ @NETWORK
- For extracting parameters from the PPPDB
  - ▸ @DUMP

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PPINIT

Command Names and Syntax

- For maintenance of your database:
  - ▸ @STATUS – for seeing how full your PPPDB, PPDB and PDB (PRD) files are.
  - ▸ @DUMP PRINTEST will tell you the names of estimator STATIONs for both STATIONs and AREAs.
- For redefining STATION, AREA, USER parameters:
  - ▸ @DEFINE [STATION, AREA, USER] OLD
  - ▸ @DELETE – for deleting stations

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PPINIT

Command Names and Syntax

- ORDER determines computational order of the MAP, MAPX, and FMAP preprocessors.

- The ORDER is determined by how the areas are used in Segments, CGs and FGs.

- Should be run when:
  - ▸ A new MAP, MAPX, or FMAP area is added, or
  - ▸ Computational order is changed in a FG or CG (move Segment from one FG or CG to another).

Data Ingest

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Product Dissemination
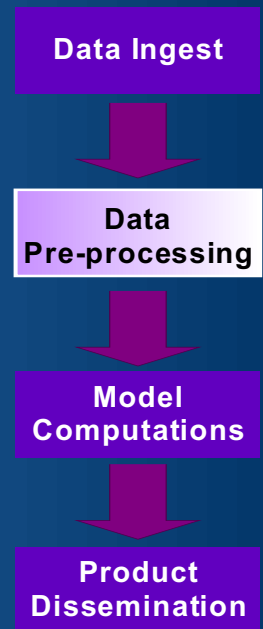
PPINIT

Documentation

The PPINIT documentation is extensive, but
you must read the notes and you must study the
options to make the documentation useful.
Understanding the format of the options documentation takes a little
patience.

Http://hsp.nws.noaa.gov/oh/hrl/nwsrfs/users_manual/htm/formats.htm